

BURROW PLUGGING BY PRAIRIE DOGS IN RESPONSE TO SIBERIAN POLECATS

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ABSTRACT.—Siberian polecats (*Mustela eversmanni*) were placed in white-tailed prairie dog (*Cynomys leucurus*) and black-tailed prairie dog (*C. ludovicianus*) burrows to simulate a black-footed ferret (*M. nigripes*) visit. Both prairie dog species plugged burrows "visited" by polecats. White-tailed and black-tailed prairie dogs plugged 2 of 6 and 3 of 6 test burrows, respectively.

Black-tailed prairie dogs (*Cynomys ludovicianus*) often attempt to cover entrances of burrows occupied or "visited" by black-footed ferrets (*Mustela nigripes*) (Hillman 1968, Henderson et al. 1969). Hillman and Linder (1973) reported that colonies of less than 16.2 hectares occupied by black-footed ferrets might have 15%–25% of the burrows plugged. The response of white-tailed prairie dogs (*C. leucurus*) to the presence of black-footed ferrets is less well known, but Clark (1978) reported that they may not plug burrows occupied by black-footed ferrets. During 1980 we examined the responses of black-tailed and white-tailed prairie dogs to Siberian polecats (*M. eversmanni*). The Siberian polecat is the closest living relative of the black-footed ferret, and the two may be conspecific (Anderson 1977). The objective of this test was to ascertain whether or not white-tailed prairie dogs plug burrows occupied or "visited" by black-footed ferrets and to verify previous observations of this behavior in black-tailed prairie dogs. The results of this study are of significant importance to searchers who conduct surveys for black-footed ferrets in prairie dog colonies.

METHODS

Field experiments were divided into two phases: (1) tests on black-tailed prairie dogs in a 6.1-ha colony near Fort Collins, Larimer County, Colorado, and (2) a trial on a 4.1-ha white-tailed prairie dog colony on Hutton

Lake National Wildlife Refuge, Albany County, Wyoming.

On each prairie dog colony .4-ha plots were established and divided into two subplots, one treatment and one control. Each subplot pair was independently tested for 3 consecutive days. All burrows in each subplot were examined each morning to determine if plugs were present. Plugs are defined as dirt material that visually blocks or obscures a portion of the burrow system. Typically, plugging material comes from dirt excavated by prairie dogs at the entrance to a burrow. Two burrows were randomly selected on each subplot for testing. A live Siberian polecat, enclosed in an 8.9 x 45.7 cm cylindrical wire hardware cloth cage, was placed in each of two selected burrows in the treatment plot, and an empty cage was placed in two control burrows in early morning before prairie dogs emerged. All cages were inserted completely below ground level. Two persons observed and recorded prairie dog response to caged polecats during each six-hour test period. Observers viewed the prairie dog colony from a parked vehicle or blind with the aid of binoculars and spotting scopes. After six hours the polecats were removed and each plot was reexamined for plugs. The following morning, if no plugs were present in the test burrows, polecats were reinserted into the same burrow. During nine days of testing (three days in each pair of subplots) on each species, we recorded the number of plugged burrows, time of plugging, and

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Fig. 1. Burrow plugged by black-tailed prairie dog in response to Siberian polecat.

behavior of prairie dogs in the presence of Siberian polecats.

RESULTS AND DISCUSSION

The results revealed that black-tailed and white-tailed prairie dogs plugged 3 of 6 and 2 of 6 burrows, respectively. None of the 12 control burrows were plugged. Plugged burrows (2) were found on one white-tailed and one black-tailed subplot, prior to placement of polecats. No other plugging was observed in nontest burrows.

Black-tailed-prairie-dog-plugged burrows were similar to those photographed on colonies occupied by black-footed ferrets (Henderson et al. 1969). Figure 1 shows a burrow entrance that was completely covered, leaving only an outline of the entrance. Plugs in white-tailed prairie dog burrows differed in being 23–25 cm below the surface, with the burrow entrances more visible. Both species plugged burrows only after the polecats were removed, and during the absence of observers. The interval between when polecats were removed from burrows and when

plugging occurred ranged from 6 to 12 hrs. The exact time of plugging is unknown but is believed to have occurred between 1300 and 2100 (MST). Burrows remained plugged for 4–8 days.

Although prairie dogs were not observed plugging burrows, they were seen approaching and responding to caged polecats. Both species of prairie dogs first detected polecat presence by scent, usually at 4.6–6.1 m downwind of the occupied burrow. Upright posture (Smith et al. 1976) characterized this detection and lasted 1–4 minutes. Prairie dogs then slowly walked toward the polecats. When prairie dogs approached within .3–.9 m and visually detected the polecat, they ran away from the hole in the direction of their approach and stood upright again, facing the burrow, and chattered (Smith et al. 1976) for 1–5 minutes. Black-tailed prairie dogs often issued a jump-yip (Smith et al. 1976) response when the polecat was first sighted and again after retreating from the burrow. Henderson et al. (1969) also reported that black-tailed prairie dogs exhibited upright posture, chattering, and jump-yips in response to black-

footed ferrets. White-tailed prairie dogs exhibited upright posture and chattering (Clark 1977) but did not jump-yip. Alarm responses from both species had little or no discernible effect on other prairie dogs. No group reactions to the polecats were noted for either species of prairie dog as has been reported for black-tailed prairie dogs and black-footed ferrets in South Dakota (Henderson et al. 1969). The only group reaction was the apparent avoidance of a polecat subplot, which contained two plugged burrows, by black-tailed prairie dogs. Eight prairie dogs moved from their activity area approximately 37 m from the vicinity of a previously occupied polecat burrow and did not return during the test period.

These tests indicate that Siberian polecat scent alone doesn't elicit the hole-plugging response in prairie dogs. A visual cue seems necessary since all plugs were in burrows where prairie dogs had visually detected polecats. Woodis (1981) also reported that Siberian polecat scent alone didn't elicit plugging by black-tailed prairie dogs in Colorado.

Test results lead us to believe that both species of prairie dogs may plug burrows occupied or "visited" by black-footed ferrets, but that on occasions no plugging may be found in ferret-occupied colonies. Black-footed ferret searchers should continue to look for plugged burrows but should not rely on

this phenomenon as an indicator of the presence or absence of black-footed ferrets.

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